conditions result in so vigorous a development of the flowers that the enveloping scales are burst.—J. M. C.

Morphology of Gnetum.—PEARSON[28] has contributed much to our knowledge of *Gnetum*, a genus so suggestive of a relationship to angiosperms as to deserve the most critical study. The present paper is a well organized summary of the known facts in reference to the genus, and while the argument for angiosperm affinity is not convincing, it shows that the case is still open. PEARSON sees in the behavior of the fusing nuclei of *Welwitschia* and *Gnetum* too much suggestion of the behavior of the polar nuclei in angiosperms to be passed over lightly. As the author remarks, "while the whole question is involved in much obscurity, it is surely not desirable at the present stage of inquiry that the search for a primitive type of endosperm, from which that of the angiosperm may be derived, should cease." Aside from the phylogenetic discussion, the paper analyzes the observed facts and theories in reference to the strobilus or "spike" of *Gnetum* in a most suggestive way.—J. M. C.

Temperature of leaves in winter.—Using careful methods of determining differences of temperature by an electrical apparatus, EHLERS,[29] working at Ann Arbor, Michigan, upon *Pinus Laricio*, found that the leaves through the absorption of radiant energy maintain during the winter temperatures of 2–10° C. higher than the surrounding air. For the month of February, 650 readings taken between the hours of 8:00 A.M. and 3:00 P.M., under all kinds of weather conditions, including both cloudy and bright days, gave an average differential temperature of 3°.06 C. Increased photosynthetic activity resulting from such increases in temperature would seem to be of considerable importance, and would tend to explain the presence and accumulation of the reserve food material found in evergreen leaves in winter by various workers. EHLERS was unable, however, to obtain any conclusive evidence of carbohydrate formation during the months of January and February —GEO. D. FULLER.

Structure of Alaria.—In a recent publication of the Puget Sound Marine Station, Miss KIBBE[30] describes the structure of *Alaria fistulosa*. In many features she finds a close resemblance to other Laminariaceae. The chief purpose of the paper is to trace the development of the fistulose or chambered character of the midrib. Severe strain during growth, resulting from continued transverse and radial division of cortical cells after the cells of the medulla

[28] PEARSON, H. H. W., Notes on the morphology of certain structures concerned in reproduction in the genus *Gnetum*. Trans. Linn. Soc. London **8**:311–332. *pl. 31, 32*. 1915.

[29] EHLERS, J. H., The temperature of leaves of *Pinus* in winter. Amer. Jour. Bot. **2**:32–70. 1915.

[30] KIBBE, ALICE L., Some points in the structure of *Alaria fistulosa*. Puget Sound Marine Sta. Publ. **1**:43–57. *pls. 8, 9*. 1915.

have ceased to divide, produces rifts in the pith tissue; and from these rifts chambers are gradually developed. Meanwhile, hyphal chains and sieve tubes, broken down in the process of chamber formation, form a mucilaginous substance. Septa between the chambers are made up of hyphal chains left unbroken by deep lobing of a ridge sent out along the angled side of the rachis and inclosing a portion of the pith web.—MABEL L. ROE.

A new luminous fungus.—KAWAMURA[31] has investigated a luminous and very poisonous fungus that grows on the decaying trunks of the beech (*Fagus sylvatica*) in the uplands of Japan, and appears in the autumn. It is known by a Japanese name meaning "moon-night mushroom," and proves to be a new species of *Pleurotus* (*P. japonicus*). The light is emitted by the gills only, which are uniformly luminous all over. The range of temperature for luminosity is 3–40° C., the optimum being 10–15° C. Experiments were made by exposing the fungus to nitrogen, hydrogen, ether, and vapor of chloroform, in all of which the luminosity disappeared after a variable interval; while in oxygen there was no change. It is stated that about 100 sq. cm. of luminous area gives enough light for reading, and that the luminosity is very evident at a distance of 30 m. or more.—J. M. C.

Alaskan liverworts.—EVANS,[32] studying the collection of Alaskan liverworts made by Dr. T. C. FRYE, finds that of 70 species in a condition to be identified with certainty, 20 are new to Alaska, 7 new to America, and 3 new to science. The Harriman Expedition yielded 63 species, of which 39 were new to Alaska, 6 new to America, and one species new to science. The total number of species now known in Alaska is 105, and comparatively little intensive exploration has been done. An admirable feature of the paper, and one which should be followed by future explorers, is that the latitude and longitude of each station are given to one minute. This will enable competent collectors to find at any future time almost the exact spot where a collection has been made.—W. J. G. LAND.

Growth and concentration of nutrient solution.—BRENCHLY[33] concludes that barley and wheat do not give complete or maximum growth in a solution containing the amount of potash and phosphoric acid (K_2O 28 ppm. P_2O_5 7 ppm.) stated by CAMERON to exist in soil solutions. The reviewer would suggest that the surface of contact between the root hair or root epidermis and the soil particle, and not the general soil solution, is the medium from which plants

[31] KAWAMURA, SEIICHI, Studies on the luminous fungus *Pleurotus japonicus*, sp. nov. Jour. Coll. Sci. Tokyo **35**:1–29. *pl. 3.* 1915.

[32] EVANS, ALEXANDER W., Report on the Hepaticae of Alaska. Bull. Torr. Bot. Club **41**:577–616. *pl. 21.* 1915.

[33] BRENCHLY, W. E., The effect of the concentration of the nutrient solution on the growth of barley and wheat in water cultures. Ann. Botany **30**:77–90. 1916.